

Appl. No. : 09/650,173
Filed : August 29, 2000

REMARKS

The foregoing amendments are responsive to the non-final Office Action mailed on June 24, 2003. Applicant's representative would like to initially thank Examiner Opsasnick for withdrawing the finality of the rejection. Applicant assumes that box 2a ("this action is FINAL") on the Office Action Summary page was checked in error.

I. Summary of the Amendments

By the foregoing amendment, Claims 1, 15, 24, 33 and 43 have been amended as shown above in redline form. No new matter has been added.

II. Art-based Rejection

All of the independent claims of the present application stand rejected on obviousness grounds over U.S. Patent 5,917,889 ("Brotman") in view of U.S. Patent 6,532,444 ("Weber"). In view of the amendments above, and for the reasons set forth below, Applicant submits that the rejection is improper.

Discussion of Present Application and Applied References

The present application discloses, among other things, a query submission/capture process by which a user can efficiently and reliably submit a search query for searching a database of items. The method is particularly well suited for conducting database searches by telephone. In a preferred embodiment, the user is prompted to use a telephone keypad and/or voice to enter a set of characters of the search query (e.g., the first three characters of a query term). The user is also prompted to utter the full search query. For example, to search for books by the author "Stephen King," a user may initially press the keys containing the characters "S-T-E" on a telephone keypad (and/or utter these characters), and then utter the name "Stephen King."

To interpret the utterance of the search query (also referred to as a "voice query"), the set of characters received from the user is preferably used to dynamically generate a corresponding voice recognition grammar, or to select a previously generated voice recognition grammar from memory. This voice recognition grammar is then used to interpret the utterance of the full search query. For instance, in the example above, a grammar corresponding to the letters "S-T-E" would be generated or selected from memory, and would then be used to interpret the user's utterance of the name "Stephen King."

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The voice recognition grammar is preferably derived from a corresponding subset of the items in the domain being searched (e.g., all items having author names starting with "S-T-E,"). As a result, the grammar tends to be much smaller in size than a grammar suitable for searching the entire domain of items. The relatively small size of the grammar improves the reliability of the voice recognition process, significantly improving the likelihood that the user's utterance of the search query will be accurately captured.

Brotman and Weber do not suggest such a method. Weber discloses a user interface through which a user can interact with a computer system by voice. The user's utterances are interpreted in-part using context-specific voice recognition grammars that correspond to specific subjects such as "news," "weather," and "stocks." Col. 6, lines 45-61. Unlike the method disclosed in the present application, these context-specific grammars are not selected based on the user's entry of specific characters of the uttered term or phrase. Rather, they are apparently selected based on the topic or subject currently being browsed, as determined from prior utterances. See col. 3, lines 10-15 and col. 8, lines 1-8.

In contrast to the method disclosed in the present application, Weber's method of using context-specific voice recognition grammars is not well suited for searching large domains of items, such as a domain of millions of book titles or music titles. If Weber's method were used for this purpose, the user would likely have to "drill down" through multiple levels of item categories and subcategories (e.g., books\fiction\mysteries); otherwise, the voice recognition grammars would most likely be too large to provide reliable voice recognition. In addition to being burdensome to users, such an approach would require the users to know how the items they are searching for are categorized.

Brotman does not suggest a solution to this deficiency. In this regard, Brotman does not disclose or suggest prompting a user to enter a subset of the characters of a search query to be captured using voice recognition. Indeed, Brotman does not even involve the processing of search queries. Rather, as discussed in Applicant's response to the first Office Action, Brotman focuses on techniques in which a telephone user's keypad entries and associated character utterances are used in combination to identify the specific characters intended by the user. Nothing in Brotman suggests using this character capture method in a way that would overcome the above-noted deficiency in Weber's grammar selection process.

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In view of the foregoing, Applicant submits that Weber and Brotman do not collectively suggest a method in which a user's entry of a set of characters of a search query is used to select or generate a grammar for interpreting the user's utterance of the query. Applicant also submits that it would not have been obvious to combine the teachings of Weber and Brotman because, among other reasons, they involve very different types of devices. Specifically, Weber apparently involves interaction with a personal computer, while Brotman involves the entry of data by telephone.

The present application also discloses a novel search query refinement method that is not disclosed or suggested by Brotman and Weber. This method is discussed below with reference to Claim 33.

Each independent claim is discussed below.

Claim 1

Claim 1, as amended herein, recites a method for improving voice recognition accuracy when a user submits a search query by voice to search a domain of items. The method involves "prompting a user to submit a set of characters of a voice query for searching the domain of items, and receiving the set of characters from the user, wherein the voice query is an utterance by the user of a search query, and the set of characters defines a portion of the search query." As discussed above, neither Brotman nor Weber discloses such a process.

Claim 1 also recites the following: "in response to receiving the set of characters from the user, identifying a subset of items in the domain that correspond to the set of characters," and "generating a dynamic grammar based at least in part on the subset of items, said grammar specifying valid utterances for interpreting the voice query." Claim 1 is thus directed to an embodiment in which the grammar is generated dynamically in response to the user's submission of the characters. Neither Brotman nor Weber discloses such a method. In this regard, the context-specific grammars of Weber are apparently pre-generated, and are updated over time.

In view of the foregoing, Applicant submits that Claim 1, and the claims which depend from Claim 1, are patentably distinct from Brotman and Weber.

Claim 15

Claim 15, as amended herein, is similarly directed to a method for improving voice recognition accuracy when a user submits a query by voice to search a domain of items. The method comprises “receiving a set of characters entered by a user, the set of characters representing a portion of a query.” As discussed above, neither Brotman nor Weber discloses this step.

Claim 15 also recites “in response to receiving the set of characters, selecting a grammar which is derived at least in-part from text extracted from a subset of items that correspond to the set of characters entered by the user,” and “providing the grammar to a voice recognition system for use in interpreting the query as entered by the user by voice.” Neither Brotman nor Weber discloses this combination of limitations. In this regard, as discussed above, Weber selects the context-specific grammars based on the subject being browsed, and not based on the user’s entry of a set of characters of a query.

Claim 15 has also been amended herein to clarify that “the user’s entry of a subset of characters of the query, together with the user’s utterance of the full query, are used in combination to capture the query.” Again, no such method is disclosed or suggested by Brotman and Weber.

In view of the foregoing, Applicant submits that Claim 15, and the claims that depend from Claim 15, are patentably distinct from Brotman and Weber.

Claim 24

Claim 24 is directed to a system that includes “a first code module which causes a user to be prompted to enter a set of characters of a query such that the user may partially specify the query,” and “a second code module which causes the user to be prompted to utter the query.” The claim also calls for a query server that “is programmed to use the set of characters to select a grammar for use by [a] voice recognition system to interpret the query as uttered by the user.” As discussed above, Brotman and Weber do not disclose such a system. Claim 24, and the claims that depend from Claim 24, are therefore patentably distinct from Brotman and Weber.

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Claim 33

Claim 33 involves a method in which a user refines a search query by uttering an additional query term to add to the query. To interpret the user's utterance of the additional query term, a grammar is generated at least in-part by extracting text from the set of search result items resulting from the original query. A preferred embodiment of this method is described beginning at page 9, line 24 of the present application.

The Examiner has effectively disregarded Claim 33 by grouping it with other independent claims that do not involve search query refinement. Indeed, neither Brotman nor Weber discloses a query refinement process, let alone the particular query refinement process defined in Claim 33. Claim 33, and the claims that depend from Claim 33, are therefore patentably distinct from Brotman and Weber.

Claim 43

Claim 43 is directed to a method that involves "prompting a user to depress a sequence of telephone keypad keys corresponding to a sequence of characters of a query term of a search query." The user is also prompted "to utter the search query by voice." The voice utterance of the search query is interpreted "using a voice recognition grammar that corresponds to the sequence of keys depressed by the user." As discussed above, Brotman and Weber do not disclose or suggest such a method. Claim 43, and the claims that depend from Claim 43, are therefore patentably distinct from Brotman and Weber.

Claim 50

Claim 50 is directed to a method of capturing a search query specified by a user by telephone. The method comprises "receiving from the user an indication of a subset of the characters contained in the search query, said indication of the subset of characters being specified at least in part as telephone keypad entries." The method further comprises "receiving from the user a voice utterance that represents the entire search query," and "interpreting the voice utterance using a voice recognition grammar that corresponds to the indication of the subset of characters."

As discussed above, Brotman and Weber do not disclose or suggest such a method. Indeed, neither reference discloses *any* method of capturing a search query specified by a user by

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telephone. Claim 50, and the claims that depend from Claim 50, are therefore patentably distinct from Brotman and Weber.

III. Conclusion

In view of the foregoing, Applicant submits that the claims are patentably distinct from the cited art, and requests that the rejections be withdrawn.

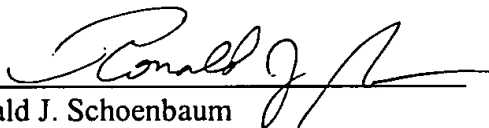
By arguing that the claims are patentable over Brotman and Weber, Applicant does not intend to imply that Weber is "prior art." Rather, Applicant reserves the right to later disqualify Weber as prior art. In addition, by focussing on the independent claims in the discussion above, Applicant does not intend to imply an agreement with the Examiner's assertions regarding the dependent claims.

If any issues remain which can potentially be resolved by telephone, the Examiner is invited to call the undersigned attorney of record at his direct dial number listed below.

Respectfully submitted,

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Dated: 9-2-03

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